

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 19.

January, 1917.

No. 217.

STATICE IN NORTH AMERICA.

S. F. BLAKE.

LIKE its near relative *Limonium*, the genus *Statice*¹ (*Armeria* Willd.) is one of which the taxonomic treatment has been subject to great diversity of opinion, Boissier in 1848 having enumerated fifty-two species, all of which Otto Kuntze in 1891 proposed to reduce to one. The several pre-linnaean species were lumped by Linnaeus in the *Species Plantarum* into one, *Statice Armeria*, the diagnosis of which ("scapo simplice capitato, foliis linearibus") might even today almost be taken as a generic character. Miller in 1768 and Link in 1801 recognized several European species, and Willdenow in 1809 had nine species of the genus.

In 1814 Pursh² recorded *Statice Armeria* as growing "on rocks near the sea-shore: Pennsylvania to Virginia. July, Aug. v. v." Torrey³ soon after remarked that Pursh had "made some mistake respecting the habitat, as there is no 'sea-shore' to Pennsylvania," and, as Pursh never visited any region in America where the Thrift grows as a native, it is clear that his "v[idi] v[ivam]" was based either on some misapprehension or on garden specimens, perhaps escaped. The species was rightly noted by Gray⁴ in the first edition of the *Manual*

¹ The reason for the use of *Statice* L. emend. Mill. in place of *Armeria*, already explained in my revision of American *Limonium* in *RHODORA* xviii. 55-56 (1916), may be repeated here. Linnaeus's *Statice* included the two groups, but he expressly noted the distinctions of *Statice* and *Limonium* in his observations under the genus, and this action must be taken as indicating the species with rounded heads as the typical group of the genus, and hence as that one for which the name must be retained, in accordance with Article 45 of the International Rules.

² Fl. Am. Sept. i. 212 (1814).

³ Fl. N. & Mid. U. S. i. 329 (1824).

⁴ Man. ed. 1. 280 (1848).

as "a native of Northern Canada . . . but not of the United States," and Pursh's error has in this case not caused the confusion that has resulted from some of his other doubtful records.

The first really satisfactory exposition of the species of *Statice* (*Armeria*) was made by the keen botanist Wallroth¹ in 1844. Its species, of which twenty-seven were recognized, were divided by him into three sections based on the pubescence of the fruiting calyx: *Mastrucatae*, with calyx-tube pubescent between as well as on the ribs; *Barbatae*, with calyx-tube pubescent only on the ribs; and *Calvae*, with tube glabrous. The first two sections were each subdivided according to the nature of the attachment between calyx and pedicel into two groups — *Rostellatae*, with the base of the calyx drawn out into a subacicular beak, and *Truncatae*, in which the point of attachment of the calyx was much shorter, and the calyx-base consequently less prolonged. The American species recognized were three, all described as new: *Armeria labradorica*, the only eastern species, of the *Mastrucatae Truncatae*; and *A. arctica*, based on the *Armeria vulgaris* forma *arctica* of Chamisso, from the Alaskan coast and islands, and *A. sanguinolenta*, from "Sumpfen Nordamerika's," both of the *Barbatae Truncatae*. In Boissier's monograph² of *Armeria* in 1848 two primary divisions of the genus were recognized. *Macrocentron*, corresponded in general to Wallroth's two groups called *Rostellatae*, with his *Calvāe*, while *Plagiobasis* embraced all the remaining species. The second and much larger section, *Plagiobasis*, including all the American species, was divided into § 1. *Holotrichae*, answering to Wallroth's *Mastrucatae Truncatae*, with calyx pubescent both on and between the ribs, and § 2. *Pleurotrichae*, equalling Wallroth's *Barbatae Truncatae*, with calyx pubescent only on the ribs. Wallroth's three North American species were recognized, and *A. andina* Poepp. β. *californica* was described from California.

Despite their recognition by Boissier, and the fact that by him as by their describer they were considered referable to two distinct sections or subsections, no notice of Wallroth's species seems to have been taken in American botanical literature in the seventy-two years since their publication. Gray³ in 1878, treating of *Armeria vulgaris* Willd. from North America, described it as having the calyx-tube

¹ Beitr. i. 169-218 (1844).

² Boiss. in DC. Prod. xii. 674-689 (1848).

³ Syn. Fl. ii. pt. 1. 55 (1878).

“10-nerved, hairy at least on the stronger nerves or angles; the lobes blunt or cuspidate,” and gave it “in various forms” a range through Arctic America on both coasts and south to California, Europe, northern Asia, Chili, and Patagonia. Later American authors have without exception followed Gray’s course in combining the eastern and western forms of our coasts, and in the latest work treating of the genus in North America, Britton & Brown’s *Illustrated Flora* (ed. 2, ii. 719 (1913)), the calyx is described in similar terms.

Reference has already been made to Kuntze’s proposed amalgamation of all the fifty or more described species in one, the original *Statice Armeria* L. The slightest consideration of any moderately large collection of the genus is sufficient to show the absurdity of such a course. Although the species are usually closely similar in habit, characters of fair significance and constancy can be found in the size, shape, and pubescence of the leaves, in the size of the head and the nature of the bracts, and occasionally in the pubescence of the stem. It is to the fruiting calyx, however, that one must look for the essential characters not only of sectional subdivision but also of specific discrimination. The constancy of the characters on which the subsections *Holotrichae* and *Pleurotrichae* are based has indeed been called into question by more than one botanist. It was however firmly supported by Boissier, whose knowledge of the genus as a whole has probably not yet been surpassed, and Druce, who has carefully examined the English species as to this feature, states¹ that he has found no evidence of intergradation between the two groups. The very confused state of the material in most herbaria undoubtedly contributes to the belief that the location and amount of the pubescence is subject to variation, but in the apparent absence of proof of this assumption the opinion of Wallroth and Boissier, the two leading monographers of the genus, is not lightly to be disregarded, and the evidence I am about to bring forward, derived from a careful study of the American species, goes far to confirm the validity of the characters on which the groups *Holotrichae* and *Pleurotrichae* are founded.

Careful examination of the material in the Gray Herbarium shows that in every one of the thirty collections of *Statice* from the eastern coast of America (including several from Greenland) the calyx-tube is more or less hairy between the ribs, at least in the neighborhood

¹ Journ. Linn. Soc. Lond. xxxv. 68–70 (1901).

of the oblique rib connecting the intermediate ribs at apex with the main ribs of the calyx, which itself (*i. e.* the cross-rib) is also always hairy; while each of the twenty-two collections from western America, including the area from Kotzebue Sound to Monterey, is absolutely glabrous between the ribs, although these are frequently as hairy as in the eastern species, and the cross-ribs uniting the main and intermediate ribs are likewise always perfectly glabrous. Although no other constant differences have been discovered between the plants of the two areas, the absolute constancy of this feature and its correlation with geographic distribution, in the light of the importance laid upon just this character by Wallroth and Boissier, lead me to consider the plants perfectly distinct. The two western species of the *Pleurotrichae* proposed by Wallroth, however, are not confirmed by the material examined, which is much more extensive than that accessible to him.

Although agreeing in the essential character of pubescence of the calyx-limb, the eastern plants differ somewhat among themselves in regard to the shape of the calyx-lobes, which may be merely acuminate, apiculate, short-cuspidate, or rather long-cuspidate (cusp 0.4–0.5 mm. long). Careful study shows that while the distinction between the long-cuspidate and short-cuspidate forms seems a fairly constant one, no line can be drawn between the short-cuspidate, apiculate, and acuminate forms, all three or gradations between them occurring not rarely on the same calyx. Accordingly it has seemed best to recognize the long-cuspidate form, which best agrees with Wallroth's description of his *A. labradorica*, as varietally distinct from the more varied but entirely intergradient plexus of short-cuspidate to acuminate forms. While the long-cuspidate form, in all the material at hand, is always pubescent on the scape, as described by Wallroth, the other plant occurs in both a glabrous and a pubescent form, although no concomitant characters have been found to distinguish them. It has seemed advisable to give this variation only formal recognition. The three sheets of this variety with merely acuminate or apiculate calyx-lobes from Mount Albert, Quebec, the only known station south of Labrador, agree in having ciliate leaves, all the others being glabrous on the leaves even if puberulous on the scapes, with the exception of a single collection from Labrador.

The western plants, as has been brought to my attention by Prof. Fernald, also show differences among themselves worthy of at least

varietal recognition. The Californian material, distinguishable at a glance by its longer broader leaves and generally taller scapes, has always glabrous leaves with a very blunt sometimes almost truncate tip, naturally more obvious in the broader-leaved specimens but distinguishable in all. In the Alaskan material, on the other hand, the usually much shorter, narrower, and laxer leaves are always more or less ciliate, and the tip is distinctly subulate-pointed. However no absolute line of demarcation exists. In the specimens collected by Bridges (no. 320) and Bolander in California the glabrous leaves are often more or less subulate-pointed; Allen's number 96, from Washington, like Lyall's plants from Vancouver Island, is also more or less intermediate in this respect; and Rosendahl & Brand's 19, from Vancouver Island, although with the stiff glabrous leaves of the Californian plant, is quite intermediate in nature of leaf-tip. While the Alaskan form, in habit and in leaf-apex, thus shows a likeness to the eastern form, its calyx-characters are distinctly those of the Californian plant, with which as has been shown it intergrades, and the two seem best treated as varieties of one species.

The relationship of the Californian plant, which was described by Boissier as a variety of *Armeria andina* Poepp. (*Statice andina* (Poepp.) Rendle), to the latter is quite evident when material of the two is compared. The two collections in the Gray Herbarium (by *C. Gay* and *Reed*) referable to *S. andina* nevertheless show sufficiently marked differential characters from the North American species to make it inadvisable to unite them, particularly when the great gap in their ranges is considered. They have an apparently much longer leafy axis than the Californian plant, and the blunted emarginate calyx-lobes are mucronulate or aristulate from the terminal notch by the prolonged midribs of the lobes. The stem is also strongly pustulose, a feature perhaps of no great consequence but at any rate consistently shown by the South American material in the Gray Herbarium. Although the resemblance between the two is sufficient to indicate the possibility of a genetic relationship in the not very remote past, the present gap in characters and range and the intergradation above demonstrated between the Alaskan and Californian extremes indicate that the latter is best treated as a variety of the Alaskan plant.

KEY TO FORMS.

- a. Calyx-tube pubescent between as well as on the ribs; cross-ribs pubescent.
 1. *S. labradorica* (Wallr.) Hubb. & Blake.
 b. Calyx-lobes long-cuspidate (cusp 0.4–0.5 mm. long) . . . Var. *genuina* Blake.
 b. Calyx-lobes acuminate to short-cuspidate (cusp 0.2 mm. long or less).
 Var. *submutica* Blake.
 c. Scape glabrous Forma *glabriscapa* Blake.
 c. Scape pubescent Forma *pubiscapa* Blake.
 a. Calyx-tube pubescent only on the ribs; cross-ribs glabrous.
 2. *S. arctica* (Cham.) Blake.
 b. Leaves ciliate, the apex subulately acutish Var. *genuina* Blake.
 b. Leaves glabrous, the apex very bluntly rounded.
 Var. *californica* (Boiss.) Blake.

1. **STATICE labradorica** (Wallr.) Hubbard & Blake, comb. nov. Root long, slenderly tapering, white within. Scapes 1–7, glabrous or densely shortly spreading-pubescent, 2.8–27 cm. high. Leaves in a dense basal tuft, narrowly linear, shortly subulate-pointed or slightly apiculate, glabrous or rarely ciliate, 1-nerved or the broader 3-nerved, the nerves slightly impressed above, 3.5–8 cm. long, 0.7–1.5 (–2) mm. wide. Heads hemispheric, 1.5–2.1 cm. in diameter. Two outermost bracts lance-ovate, acuminate, scarcely mucronate, glabrous, with brownish center, about 8 mm. long; next three empty, broadly elliptic, mucronate by the excurrent brown midrib at the rounded apex, 8 mm. long, 5 mm. wide. Spikelets 2–3-flowered. Fruiting bract suborbicular-cuneate or -obovate, broadly rounded at the somewhat undulate apex, scarious-membranaceous, very slightly greenish-nerved in middle, with brownish center and often purplish border, 7.5–8.5 mm. long. Pedicels glabrous, short; scar of attachment oblique, ovate. Calyx obconic below, with funnelform limb, 6–7 mm. long; proper tube 3–3.3 mm. long, 10-ribbed, densely ascending-pilose on all the ribs as well as on the cross-ribs (i. e. those connecting the main and intermediate ribs), and more or less densely ascending-pilose between them, at least toward the summit of the proper tube; limb 5-lobed, whitish to pale lavender, scarious, the 5 brown or purplish-brown short-pilose nerves evanescent in the middle of the lobes or running to their apices and prolonged into a cusp; lobes deltoid or lance-deltoid, from acuminate to apiculate, short-cuspidate, or long-cuspidate, about 1.2 mm. long; intermediate teeth truncate, emarginate, or rounded, about 0.3 mm. high. Petals lilac. — *Armeria labradorica* Wallr. Beitr. i. 185 (1844); Boiss. in DC. Prod. xii. 678 (1848). *Statice Armeria* and *Armeria vulgaris* Am. auth., in part.—The above description is drawn to include all variations of the species. This may be divided into the following varieties and formae.

Var. **genuina** Blake, var. nov. Calycis lobi longe (0.4–0.5 mm.) cuspidati. Scapus semper pubescens.—Calyx-lobes with a cusp 0.4–0.5 mm. long. Scape always pubescent.—FIG. 2.—Greenland

and Labrador.—GREENLAND: Netiuleme, Whale Sound, 13 Aug. 1894, *Wetherill* 176. LABRADOR: Netlik Bay, 4 Aug. 1861, *Hayes Expedition* 35; Kangalaksiorvik Bay, Sept. 1908, *O. Bryant*; Nain, 11 Aug. 1897, *Sornborger* 112.

Var. **submutica** Blake, var. nov. Calycis lobi vel acuminati vel apiculati vel breviter cuspidati (cuspidate 0.2 mm. longa vel brevior).—Calyx-lobes acuminate, apiculate, or short-cuspidate, the cusp 0.2 mm. long or less.

Forma **glabriscapa** Blake, forma nov. Scapus glaber.—FIG. 1.—Greenland to Newfoundland and Mt. Albert, Quebec.—GREENLAND: Aamhavn, 1870, *Puggren*; Fan Glacier, Inglefield Gulf, 2 Aug. 1894, *Wetherill* 143. LABRADOR: Forteau, 1870, *Rev. S. R. Butler*. NEWFOUNDLAND: limestone barrens, near sea level, Pointe Riche, 4 Aug. 1910, *Fernald, Wiegand, & Kittredge* 3880; serpentine tablelands, Bonne Bay, 380 m., 27 Aug. 1910, *Fernald, Wiegand, & Kittredge* 3879; highest summits of the Lewis Hills, July 1911, *L. S. Sanford*; sandy plains, Coal River, 1896, *Waghorne* 29; Blomidon District, July 1911, *C. C. Stewart* 11; serpentine and magnesian limestone barrens, northern bases and slopes of Blomidon Mts., 24 July 1910, *Fernald, Wiegand, & Kittredge* 3878; serpentine tableland, 550 m., northeast region of the Blomidon Mts., 21 Aug. 1910, *Fernald & Wiegand* 3878a. QUEBEC: Mt. Albert, Gaspé, common above 915 m., 27 July 1881, *J. A. Allen*; very abundant in crevices and detritus of serpentine, especially on open barrens, 900–1050 m., Mt. Albert, 8 July 1905, *Collins & Fernald* 127; serpentine barrens, Mt. Albert, 23 July 1906, *Fernald & Collins* 710 (TYPE in Gray Herb.).

Forma **pubiscapa** Blake, forma nov. Scapus plus minusve dense breviterque patenti-pubescent. — Greenland and Labrador.—GREENLAND: near Cape Acland, Inglefield Gulf, 31 July 1894, *Wetherill* 122; Cape York, 23 July 1894, *Wetherill* 65; Ulugsak near Arveprinsens Ejland, 3 July 1883, *Sylov*; Godhavn, 7 Aug. 1877–78, *Kumlein*; Karsuk, *Rink*. BAFFIN LAND: Nikkerton Islands, 15 July 1877–78, *Kumlein*. UNGAVA: Port Burnell, Hudson Strait, 18 July 1910, *J. M. Macoun* 79392. LABRADOR: Ehortiarsuk, Cape Chudleigh, Aug. 1896, *C. Schmitt* 308; 32 km. north of Narvak, 28 Aug. 1908, *H. S. Forbes*; Rama, July–August 1899, *A. Stecker* 328 (TYPE in Gray Herb.); Hebron, 4 Aug. 1908, *H. S. Forbes*; hills back of Okkak, Aug. 1911, *F. C. Hinckley*; Flint I., near Port Manvers, 22 Aug. 1908, *O. Bryant*.

- Wallroth's *Armeria labradorica* was based on specimens collected by Sommer "in den Sumpfen auf Labrador" in 1833. Its relationship with *Statice maritima* Mill. of Europe is undoubtedly close, but I have seen no European specimens exactly matching our plant, and in any case the European species are so confused and so much in need of careful revision that it seems best to adopt for the American plant

Wallroth's clearly applicable name until the whole group can be subjected to the thorough investigation it so urgently requires, material for which can be found only in European herbaria. From the characters given by Wallroth ("Frucht . . . sowohl an den hervorstehenden Rippen als an den Zwischenfeldern fein beharrt. Die Fruchtkrone fast von der Länge der Frucht, rundlich and kurz gelappt und mit eben so kurzen Grannen versehen," or as given in the Latin diagnosis, "fructibus obovatis breviter pedicellatis mastrucatis, pappi lobis ovatis subaristatis") it seems highly probable that the specimens collected by Sommer are referable to my first variety, which is accordingly designated var. *genuina*.

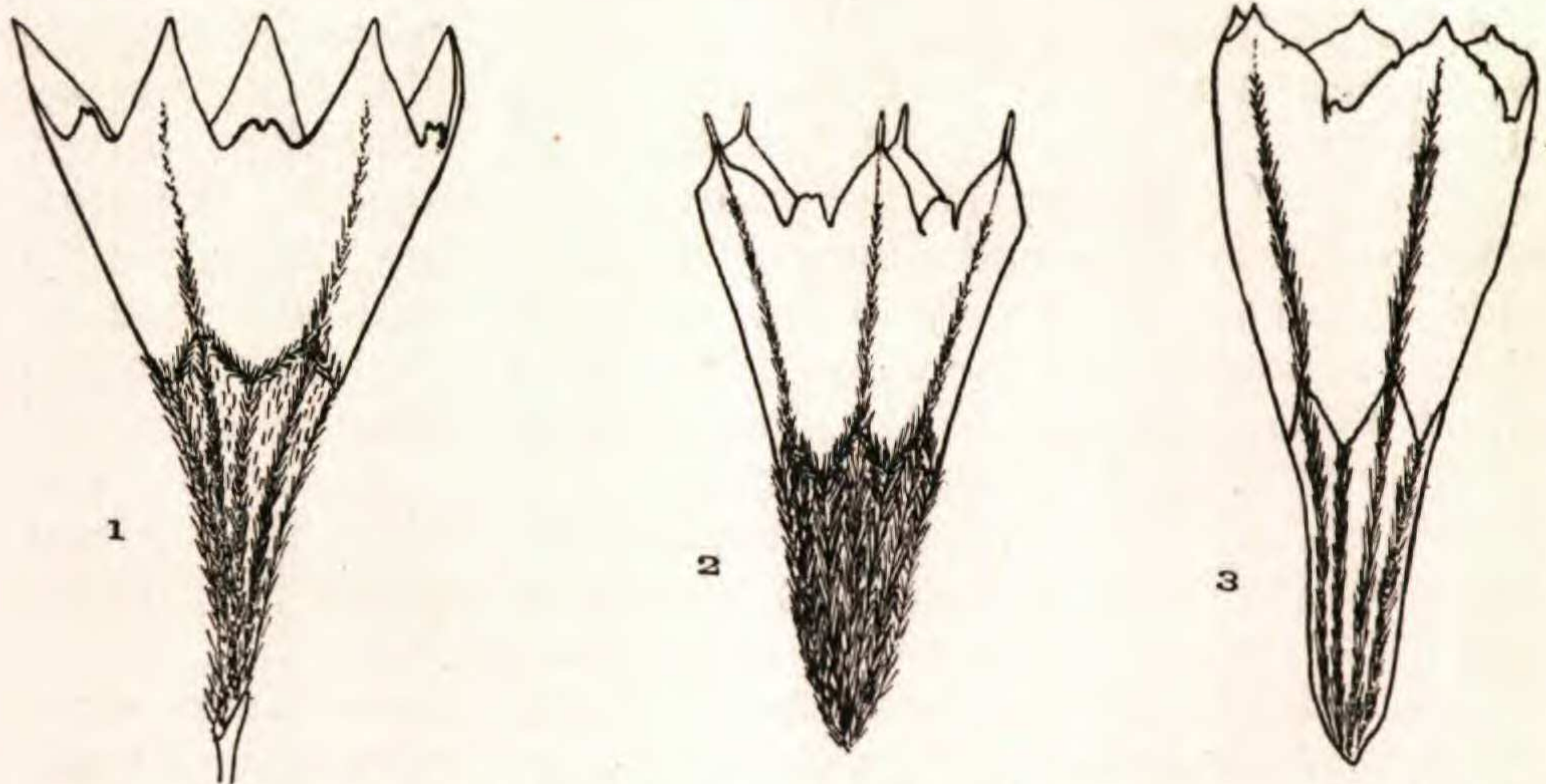


FIG. 1.—*Statice labradorica* (Wallr.) Hubbard & Blake var. *submutica* Blake forma *glabriscapa* Blake (Fernald & Collins 710).

FIG. 2.—*S. labradorica* var. *genuina* Blake (Sornborger 112).

FIG. 3.—*S. arctica* (Cham.) Blake var. *californica* (Boiss.) Blake (Baker 2851). All $\times 7$.

2. **STATICE arctica** (Cham.) Blake, comb. nov. Root as in the last or thicker, pinkish in section. Scapes 1-6, erect, slender or stoutish, always glabrous, more or less glandular-punctate, 12-52 cm. high. Leaves in a dense basal tuft, linear, rounded or blunt at apex, or subulately acutish, enlarged below into the scarious-margined base, glabrous or ciliate, 1-3(-sub-5)-nerved, (3-)5-20 cm. long, 0.8.-3(-4.5) mm. wide. Heads hemispheric, 1.6-2.5 cm. thick. Outer bracts three, ovate to oblong-ovate, oblong-lanceolate, or rarely lanceolate, acute, scarcely mucronate, scarious-margined, 6-13 mm. long, 3.5-5 mm. wide, glabrous. Sterile bracts about seven, rotund-elliptic, rounded at apex, not mucronate, broadly scarious-margined, 9-12 mm. long, 4.5-5.5 mm. wide. Spikelets 3-flowered. Fruiting bract elliptic-cuneate, broadly rounded at apex, not mucronate, scarious, nerved in middle below, ca. 11 mm. long, 6.5 mm. wide. Bractlets (each subtending a flower) broadly oval, rounded at apex, scarious, 6 mm.

long or less. Pedicels glabrous, 3.5 mm. long or less; scar of attachment oblique, obovate-fusiform. Calyx 6.5–7 mm. long; proper tube obconic, 10-ribbed, the ribs pilose with spreading-ascending hairs, the interspaces and cross-ribs entirely glabrous; limb funnel-form, 5-nerved, the nerves shortly pilose; lobes about 1 mm. long, depressed-deltoid, abruptly apiculate or mucronulate, rarely retuse, the nerve evanescent near middle or continuing to apex, the tooth or mucro 0.2–0.4 mm. long; intermediate teeth obsolescent or absent. Petals lilac.—*Armeria vulgaris* Willd. forma *arctica* Cham. Linn. vi. 566 (1831). “*A. vulgaris* E. *humilis* forma *arctica* Ebel, De Armer. Diss. 31 (1840),” fide Wallr. l. c. *A. arctica* Wallr. Beitr. i. 193 (1844); Boiss. in DC. Prod. xii. 679 (1848). *A. sanguinolenta* Wallr. l. c. 207 (1844); Boiss. l. c. 682 (1848). *A. vulgaris* and *Statice Armeria* Am. auth., in part.—Two varieties may be recognized.

Var. **genuina** Blake, var. nov. Folia ciliata apice subulato-acutiuscula.—Alaska to British Columbia and Washington.—ALASKA: Kotzebue Sound, *Bongard*, *Arnott* (*Beechey's Voyage*), 1881, *Muir* 58; Cape Nome, 1900, *Blaisdell*; Unga I., 2 July 1872, *Harrington*; Igognak I., Unalaska, 12 Sept. 1873, *U. S. Coast Survey*; Arakamtchene I., Bering Sts., 1853–56, *C. Wright*; St. Paul I., *Elliott*, 28 July 1891, *J. Macoun*. BRITISH COLUMBIA: Vancouver I., 1858, *Lyall*. WASHINGTON: prairie, *Roy*, 13 May 1899, *O. D. Allen* 96. *Lyall's* and *Allen's* plants show some approach in leaf-tip to the next variety. *Rosendahl & Brand* 19, from crevices of slate rock, District of Renfrew, Vancouver Island, is intermediate in leaf-tip but has the glabrous leaves of var. *californica*.

Var. **californica** (Boiss.) Blake, comb. nov. Folia glabra apice late rotundata vel subtruncata, quam in var. *genuina* saepe latiora et longiora.—*Armeria andina* Poepp. β . *californica* Boiss. l. c. 678 (1848).—Fig. 3.—CALIFORNIA: hills near San Francisco, 8 April–1 May, *Bigelow*; common on ridges, sandhills near San Francisco, 3 May 1903, *C. F. Baker* 2851; Oakland, *H. Mann* 21; near Monterey, *Hartweg* 1927; Monterey, 1–15 June 1903, *G. Newell*; Pacific Grove, July 1891, *Michener & Bioletti* 194; along beach, Pacific Grove, 30 April 1903, *Heller* 6641; without locality, *Bridges* 320, *Brewer* 650, *Bolander*, *Coulter*, 577.

In this species as in *S. labradorica* hexamerous calyces occasionally occur. The Unga Island specimen collected by *Harrington* is decidedly aberrant, having a 6-lobed calyx with merely blunt or even emarginate lobes, but is connected by *Muir's* Kotzebue plant with the normal form.

It may be well to call attention to the fact that the differences shown in the figures are, with the exception of those mentioned in the text, entirely individual and in no way diagnostic of the forms represented.

STOUGHTON, MASSACHUSETTS.